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NEW HERPETOLOGICAL RECORDS FOR MISSOURI

BY
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Publication of the *Bulletin* was resumed in 1934 with volume 5 in the present format. It is now regarded as an outlet for short to moderate-sized original papers on natural history, in its broad sense, by members of the museum staff, members of the Academy, and for papers by other authors which are based in considerable part upon the collections of the Academy. It is edited by the Director of the Museum with the assistance of a committee from the Board of Scientific Governors. The separate numbers are issued at irregular intervals and distributed to libraries and scientific organizations, and to specialists with whom the Academy maintains exchanges. A reserve is set aside for future need as exchanges and the remainder of the edition offered for sale at a nominal price. When a sufficient number of pages have been printed to form a volume of convenient size, a title page, table of contents, and index are supplied to libraries and institutions which receive the entire series.

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Collecting in the past few years has led to the discovery of a salamander (*Manculus quadridigitatus*), a toad (*Bufo cognatus*), and two subspecies of spadefoot toads (*Scaphiopus holbrookii holbrookii* and *Scaphiopus bombifrons*) not hitherto recorded from Missouri. The western hog-nosed snake (*Heterodon nasicus nasicus*) has been found in the northwestern section of the state; a previous record of the cottonmouth moccasin (*Agkistrodon piscivorus leucostoma*) in northern Missouri, based on a specimen found dead on the highway, has been substantiated by a living specimen from the area; and another specimen representing a slight range extension has been obtained from the northern watershed of the Ozark region.

***Manculus quadridigitatus* (Holbrook). Dwarf Four-toed Salamander.**

The third edition of the Stejneger and Barbour check list (1933) gave the range of this salamander as "North Carolina south to southern Georgia and westward through the Gulf States to Texas." In the fourth edition (1939) an extension of the range was indicated by the addition of the words "and Arkansas to Kansas."* In 1941 inquiries were directed to Dr. Stejneger and Dr. Barbour, but at that time neither could recall the basis for this range extension. Smith (1933) had reported the species from Lafayette County, Arkansas (166 specimens), and Crawford County, Arkansas (1 specimen), and this appears to be the only basis for the change. Bishop (1943) corrected the range to correspond with the available information as follows: "North Carolina south to middle Florida, west through the Gulf States to Texas east of Trinity River, northward to Arkansas and Oklahoma." Now, however, specimens have been found which extend the range of this salamander into southwestern Missouri. On July 30, 1942, two *quadridigitatus* were

*The same statement appears in the fifth edition (1943).

collected from under a rock at the edge of a stream in Roaring River State Park, Barry County, Missouri. One of these is preserved in my private collection (PA 4520). The other has been deposited in the museum of the Chicago Academy of Sciences.

***Scaphiopus bombifrons* Cope. Central Plains Spadefoot Toad.**

While driving on the evening of September 7, 1942, I collected 23 *Scaphiopus bombifrons* in the vicinity of Atherton, Jackson County, Missouri. The first spadefoot was found on the Atherton Road, two miles south of Atherton. By walking in front of the car headlights, the others were caught from the above point to the edge of Atherton. Most of them were at the outer edge of the pavement and partly concealed by grass on the shoulders of the road.

That *Scaphiopus* could have escaped detection before, when the water-filled ditches adjacent to this section of road had been searched thoroughly in the spring months over a period of years, is probably explained by its habits. The breeding season is coincident with heavy rains and is usually very short, of perhaps twenty-four to forty-eight hours duration. If the observer does not happen to be out on such nights when the toads are calling, it is difficult to find them for they shortly return to burrows from which they seldom emerge except after rains. The young, however, emerge independent of showers.

Two inches of rain fell at Independence on September 7, and from all indications the rain was at least as heavy in the Atherton area. The rain fall undoubtedly accounted for the appearance of these toads in numbers. There was a little rain again on September 8, when I returned to Atherton and collected four *bombifrons*. From midnight to 2:30 A. M. on September 9, 23 more were found between Courtney and Cement City, Jackson County, Missouri. On September 12, 10 more were collected in the Cement City-Courtney area, two at Napoleon, Lafayette County to the east, one across the river two miles west of Missouri City, Clay County, and another five miles northwest of North Kansas City in Platte County. All of these localities are in the Missouri River bottom-land.

My work at the Standard Oil Refinery at Sugar Creek for the past ten years (part night work) has allowed frequent opportunities for casual observation of the amphibian fauna. Despite this, *bombifrons* was not encountered there before the morning of September 9, when Alfred Evans, a co-worker found a juvenile specimen near the northeast edge of the refinery, at a point near the Missouri River. Since that date I have

collected *bombifrons* at the refinery as follows: July 5 (4), July 6 (3), July 7, 1943 (5), April 30 (1), April 31, 1944 (3).

On May 20, 1944 a rain started at 10:00 P. M. and continued until 6:00 A. M. the following day. The Kansas City Weather Bureau recorded 1.19 inches but the fall was apparently heavier in the Cement City-Courtney area. The temperature range May 21 was 75° to 88° F., the mean temperature 79° F. On the evening of this date *bombifrons* was in full chorus. From a point one-half mile east of Cement City to three-quarters of a mile north of Courtney, four large separate aggregations were heard. The toads were calling from the banks or floating on the surface of temporary pools in ploughed fields. The water was slightly turbid and there was no vegetation present. Limited time permitted collecting only at one small pool where 13 were caught. *Hyla versicolor versicolor* and *Pseudacris nigrita triseriata* were also calling vigorously. Jerry Sherman and Raymond Anderson were my companions on this trip. Specimens from each of the localities have been deposited in the museum of the Chicago Academy of Sciences and the others are retained in my collection.

***Scaphiopus holbrookii holbrookii* (Harlan).** Eastern Spadefoot Toad.

A toad of this species was encountered by James Chaney on U. S. Highway 67, about five miles south of Poplar Bluff, Butler County, Missouri, in late April, 1940. Hurter (1911) included this species in the Missouri fauna because of a record for Greenway, Clay County, Arkansas, but this specimen (PA 2315) constitutes the first actual record for Missouri.

Poplar Bluff is in the southeast Missouri lowlands and *holbrookii* is very probably confined to this area in Missouri. The specimen measures 41 mm. in length and is a typical *holbrookii*.

***Bufo cognatus* (Say).** Great Plains Toad.

The occurrence of this toad in Fremont County, Iowa presaged its discovery in northwestern Missouri. On the evening of September 5, 1942, I found a male *cognatus* one mile north of Fairfax, Atchison County. This specimen (PA 4278) constitutes the first record for Missouri. Another individual of the same species was found nearby, too badly mashed to preserve.

***Heterodon nasicus nasicus* (Baird and Girard).** Western Hog-nosed Snake.

P. D. Evans and H. K. Gloyd have found two western hog-nosed snakes in southeast Missouri (Evans, 1940). Stanley (1941) has reported the species from four localities along the Illinois River system in

north-central Illinois. The Missouri and Illinois localities are all in sandy areas and can very well be considered a relict population, as the above writers have suggested, mentioning Schmidt's "steppe peninsula" hypothesis (Schmidt 1938).

Since northern Missouri has been little explored herpetologically, it has been presumed that, when more collections were made in this area, *H. nasicus* would be discovered in the northwestern corner of the state. It is known to occur in adjacent areas of Iowa and Kansas. On October 11, 1942, I found two juvenile individuals two miles west of Craig, Holt County, Missouri. These specimens are preserved in my collection (PA 4491-2). No. 4491, a male, measures 198 mm. in total length, 32 mm., tail length; supralabials 8-8; infralabials 10-10; dorsal scale rows 23-23-19; ventrals 135; caudals 36; 41 dorsal spots on body; 13 dorsal spots on tail. No. 4492, a female, measures 188 mm. in total length; 26 mm., tail length; supralabials 8-8; infralabials 10-10; dorsal scale rows 23-23-19; ventrals 126; caudals 43; 38 dorsal spots on body; 13 spots on tail.

There is a distance of approximately 365 miles between the southeast Missouri specimens and the present records. Most of the intervening territory does not supply a suitable habitat and there is nothing to indicate that the populations are connected. It therefore seems logical to conclude that the northwestern Missouri record fills a gap in what has been recognized as the present normal range of this form. Until such a time as material should be found to connect these populations, either through the intervening territory in Missouri or the intervening territory in eastern Iowa and western Illinois, I think it best to continue to consider the southeast Missouri and north-central Illinois specimens representative of an isolated population.

***Agkistrodon piscivorus leucostoma* (Troost).**

Western Cottonmouth Moccasin.

This snake has been reported from northern Missouri on the basis of a specimen found dead on the road three miles southwest of Chillicothe in Livingstone County (Anderson, 1941). A living cottonmouth recently found in this area substantiates the former record. It was discovered on July 5, 1943, in a pool formed by dumping operations of a rock quarry at Sampsel, Livingstone County, about eight miles northwest of the point where the dead specimen was found. This specimen (PA 4600) is a female with 25 dorsal scale rows, 133 ventrals, 53 caudals, 8 supralabials, 11-12 infralabials; it measures 672 mm. in total length, 107 mm., tail length. Apparently the cottonmouths in the Livingstone County area are an isolated population separated from those in the Ozark region.

Virgil Owens presented me with one of two cottonmouths collected in the Osage River, ten miles northwest of Osceola, St. Clair County in July, 1943. The specimen is a female, with 25 dorsal scale rows, 135 ventrals, 49 caudals, 8 supralabials, 12 infralabials; measuring 700 mm. in total length, 113 mm., tail length.

Evans (1940) has recorded the cottonmouth from localities on the northern watershed of the Ozarks (Miller County and Crawford County). The present record adds another locality and is a westward extension in the northern part of the range.

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